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MISCELLANEOUS INTERVIEWS ON MEDICAL  
PRACTICE AND RESEARCH IN GERMANY



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MISCELLANEOUS INTERVIEWS ON MEDICAL  
PRACTICE AND RESEARCH IN GERMANY

Reported by

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Medical

COMBINED INTELLIGENCE OBJECTIVES SUB-COMMITTEE  
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RESTRICTEDTABLE OF CONTENTS

<u>Subject</u>	<u>Page No.</u>
I. Experiments on Malaria Immunity.....	3
II. Typhus Vaccine and Typhus Diagnosis.....	6
III. Tuberculosis.....	7
IV. Hauptkontrollamt für Tuberkulose for the Province of Thuringia at Weimar.....	8
V. An Interview with Prof. Dr. Walther Schönfeld, Director of the Skin and Venereal Diseases Department of the Heidelberg University Medical School.....	9
VI. Neurologic Diagnosis.....	12
VII. Neurology and Psychiatry.....	13
VIII. Gastroenterology.....	14
IX. Psychiatric Therapy.....	16
X. Orthopedics.....	19
XI. Pathology.....	20
XII. Insect Attractants.....	21
XIII. Report of an Interview with Prof. Dr. Gerhard Käntscher.....	23

I. EXPERIMENTS ON MALARIA IMMUNITY

Dr. Klaus Schilling was formerly the director of the SS Malaria Experimental Station at the concentration camp at Dachau and has conducted his research at the concentration camp since February 1942. In previous years he had been the pathologist at the University of Munich. He has traveled extensively in Africa, where he conducted tropical disease research.

He was connected with the Robert Koch Institute in Berlin during the years of 1905 to 1935. His final position at that institute was that of chief of the Department of Tropical Diseases. He has conducted various expeditions into the tropics with the support of the Robert Koch Institute. In the years 1935 and 1936, he conducted extensive research in the field of malaria at the Wittenau Insane Asylum near Berlin. From 1937 to 1942 his studies were continued at Italian insane asylums at Siena, Florence and Voltena. His most important published works include a manual entitled "Tropical Hygiene". To the book of Kolle and Wassermann he contributed a chapter on immunity and protozoan diseases.

In 1920 Dr. Schilling was granted the sum of five thousand (\$5,000) dollars by the Rockefeller Foundation for the study of African sleeping sickness and the tsetse fly.

Dr. Schilling's project at Dachau was the attempt to find a method of procedure for immunization of personnel against malaria. His only interest was that of immunization; he did not attempt to produce an anti-serum. Subjects were prisoners from the concentration camp. These were selected by Dr. Schilling from a group of prisoners made available to him by the camp commandant; they were definitely not volunteers. Dr. Schilling claims to have no conception of his crime. His argument is based on the fact that he is "only a man of science" and that his work carried with it great importance for the benefit of mankind. He also defended himself by saying that the prisoners in his charge received better care, quarters and privileges than the average prisoner. He also kept a close physical check on his subjects. Dr. Schilling denies that there was a large mortality, dismissing this with the statement that "only a few" died due to uncontrollable circumstances. Dr. Schilling pleaded at great length with this interviewer that he be released immediately for the purpose of publishing and continuing his work and he claims a complete lack of appreciation as to why he should be held prisoner.

His work at the camp consisted of the following: The patient was infected with the parasite, in all cases a tertian strain. He then awaited the incubation period. If no fever occurred in seven to nine days, drug therapy was instituted. If the first fever attack occurred prior to this period, drug therapy was immediately instituted at the first elevation. Drug therapy was also commenced on the first demonstration of parasites in the blood. In other words, it was his aim to cause a malarial infection, but to suppress the pyrexial symptoms and prevent their appearance. This type of infection with its subsequent chemo-therapy was repeated for as many as six times consecutively. The patient was then closely observed for a year or for a longer period of time. He had previously been released for work in the camp after an observation period of six to eight weeks following the last appearance of parasites.

In this way, Dr. Schilling claims to have produced a large percentage of entirely immune subjects and an even larger percentage of subjects with partial immunity. He believes that the basis of his attained phenomena can be explained in the following way: Immunity depends on the stage of "labile infection" which immediately follows the acute or first stage of infection. In the second labile stage the patient is a carrier of the parasite; he transmits and may have a relapse of the disease at any time. In this second stage there is an equilibrium between the parasite and the host, which may be disturbed through adverse environmental conditions. The third stage of the disease is the stage of immunity without parasitaemia. The patient has an entirely negative blood and is incapable of transmitting the disease. On experimental or other reinfection of such immune persons there are subjective symptoms of a mild nature, such as headaches which quickly disappear, and the patient does not show any malaria symptoms. He believes that the various native populations have acquired this type of immunity, although he stresses the great racial differences in immunity to this disease. There are, therefore, two factors involved in the resistance to malaria. The first, that of previous infection with the same organism, the second, that of inborn racial immunity.

As mentioned before, Dr. Schilling had worked only with tertian malaria. He had used three culture strains, the first was an old culture from Madagascar; the second culture was obtained from the island of Crete in 1939; the third strain originated near Lake Ilmen in Russia and was obtained in 1941. All three of these cultures were very virile and possessed the sexual phases. Parasites were given either intravenously, subcutaneously, intracutaneously or by mosquito bite. Sporozoites were also used as infecting

material in certain cases. These were obtained from mosquito-gland preparations. No attempt was made to control or establish accurately malaria parasite dosage. An arbitrary volume of blood was chosen for injection and during the disease no parasite counts were made of the patients blood. Those cases receiving intravenous infection received immediate chemo-therapy.

These parasite cultures were maintained from patient to patient. He had several subjects whom he used solely as reservoirs, who did not figure in his research work.

Chemo-therapy consisted of quinine, one to two grams daily given usually by mouth, but also intramuscularly or intravenously. Another group of patients were given 0.3 grams of atabrine by mouth or intramuscularly. Two other groups of subjects received as additional chemo-therapy to the quinine or atabrine neosalvarsan in the dosage of 0.3 to 0.6 grams daily.

Dr. Schilling has also used experimentally a dye labeled #2516 and produced by the Boehringer Pharmaceutical House. This anti-malarial dye in his opinion was not considered as useful as atabrine, but he was quite confident that German chemical industry is close at hand in discovering a new and better anti-malarial dye or drug.

#### Summary.

Three tertian strains of malaria were given to the subjects intravenously, subcutaneously, incutaneously or by mosquito bites. Sporozoite-gland preparations were also injected.

Chemo-therapy of atabrine or quinine, with or without neosalvarsan was given at the latest nine days after infection; earlier if the patient spiked before that time or if he showed parasitaemia.

When the patient was free of the parasites and symptoms for six weeks a second, third, fourth and sometimes a fifth and sixth series of infection were restarted.

Patient received a physical check up every two weeks following these courses, over a period extending for more than a year.

His conclusions are that he has successfully produced a complete or partial immunity in the large majority of cases treated in this way.

### II. TYPHUS VACCINE AND TYPHUS DIAGNOSIS

Dr. Eyer, who is now a prisoner at the U.S. Seventh Army Interrogation Center was chief of the Institute for Typhus and Virus Research (Institut für Fleckfieber-und Virusforschung), whose last location was at Roth near Nürnberg. Dr. Heinrich Mueckter was his assistant. This institution concerned itself mostly with the production of typhus vaccine and only a small part of this project was devoted to research.

This institute was established in Cracow, Poland in 1939. Its first job was the production of louse vaccine using the methods described by Weigl of Lemberg. Dr. Przybulkiewicz was the head of this institute at this time. By April 1940, the first vaccine had been produced. Output was gradually increased in quantity as their technique and organization were improved. In 1941, the institute moved to Tschenstochau in Poland and began to function there. Another and small part of the laboratory moved to Rabka near Cracow where it began to manufacture mouse lung preparations. In July 1944, the Cracow and Rabka laboratories were greatly reduced in capacity, finally to be removed to Roth in January 1945. At Roth, limited production was restarted and continued until taken over by the United States Army.

The production of vaccine was to a great extent that of the louse type. Dr. Eyer says he prefers louse vaccine as he believes it to be of a greater potency than the egg vaccine with negligible reactions. Louse vaccine is also better known at the present time. He stated that he believes louse vaccine always to be effective while he could not say the same for the egg type. However, although the institute utilized lice in the main, it also had produced limited quantities of egg and mouse lung vaccine. Other vaccines produced by this institute were rabies vaccine which was produced at Lemberg and yellow fever vaccine which was prepared at Cracow by the mouse brain and egg method. Another line of research was carried out on trench fever and its virus etiology. They attempted to prepare a trench fever vaccination material, but were not successful.

For their preparations of the vaccine, the institute received its typhus organisms from Polish and German hospitals and from cultures of Dr. Weigl. Guinea pigs were then infected and the guinea pig brain cultures used for the preparation of either the egg, louse or mouse vaccine. Rabbit vaccine was never prepared.

Another research project which was successfully completed by the institute was that of the simplification of the Weil-Felix reaction to make a more rapid test, which at the same time would be handier under field conditions and could be used by the Wehrmacht. They have thus worked out this modification of Weil-Felix reaction which can be run at bedside: Dr. Eyer has produced a Proteus X-19 conserve. Some of the dried reagent and Proteus X-19 is impregnated on cellophane strips, the size of a microscope slide. A drop of the blood to be examined is placed on the cellophane strip and agglutination may be directly read. They have tried to supply this method for agglutination tests of the other diseases.

The institute received its funds from the Heeresanitätsinspektion, that is, the Surgeon General's Office. These funds were submitted then through local Wehrkreissanitäts-parks or through the local general hospitals. The Surgeon General's Department was thus in complete control of all policies regarding this institute.

Some of their published literature has appeared in the following journals: a. Folien Test, Deutscher Militärarzt 1943; b. Serodiagnose des Fleckfiebers, Zeitschrift fuer Hygiene, 1942; c. Konservierungsmethode von Proteus X-19, Zeitschrift fuer Hygiene, 1940; d. Technik einer Objektträger Agglutination, Zeitschrift fuer Hygiene, 1940.

### III. TUBERCULOSIS

Dr. Peter Beckmann is Stabsarzt at the Luftwaffen Lazarett in Gauting, near Munich. This is the only hospital built by the Luftwaffe for the express purpose of caring for tuberculosis patients; it had a bed capacity of 650 which has now been raised to 1,000. For several years prior to the war there were about 350,000 new cases of pulmonary tuberculosis treated in Germany each year. In 1939, an organization was set up to obtain bi-annual chest x-rays of the entire population on 35mm film. Also, plans were under way to construct a 3,000 bed hospital in Wittenberg for the treatment of tuberculosis. Both projects were dropped at the commencement of hostilities.

During the war the incidence of tuberculosis among the civilian population rose from 6.3 per 10,000 in 1939 to 13 per 10,000 in 1942. Beckmann believes that the figure at present is between 20 and 22 per 10,000. In the Luftwaffe and Wehrmacht evidence of pulmonary tuberculosis was usually associated with extreme physical and mental exhaustion. These patients responded very well to conservative treatment, viz., rest in bed with high caloric and vitamin diets.

All manner of drugs, particularly the sulfonamides, have been tried in the treatment of this disease, but all have proved worthless. Occasionally vaccines of tubercle bacilli have given encouraging results. Likewise, the intradermal inoculation of the living organism by the method of Kutschera appears to be of definite value in carefully selected cases. Surgical intervention is limited to pneumolysis with pneumothorax, and thoracoplasty. The suction closure of cavities by the method of Monaldi is also employed. Lobectomy and pneumonectomy, which are being used with increasing frequency in the United States, are not practiced in Germany for the treatment of tuberculosis.

#### IV. HAUPTKONTROLLAMT FÜR TUBERKULOSE FOR THE PROVINCE OF THURINGIA AT WEIMAR

A short interview with the Chief Clerk of the Office for the Study and Control of Tuberculosis for the State of Thuringia, located at Weimar, disclosed the following interesting facts:

There has been no appreciable increase in tuberculosis among permanent German residents since 1938. The actual increased prevalence is said to be due to the increase of the disease among foreigners.

Using X-ray picture as a diagnostic criterium, tuberculosis among Russians was ten times as prevalent in 1944 as it was in 1942.

Among German bombed-out (evacuated) personnel and foreigners, other than Russians, the rate had only increased two or three times.

Total number of cases of tuberculosis in all of Thuringia was:

in 1942 - 22,964  
1943 - 26,139  
1944 - 30,468

The new cases of tuberculosis reported in Thuringia:

In 1942 were 922 (of these 106 occurred in foreigners)  
1943 were 1153 (of these 350 occurred in foreigners)  
1944 were 1570 (of these 572 occurred in foreigners)

## Non-infectious Cases:

In 1942 there were 4510 cases (of these 814 occurred in foreigners)  
 1943 there were 5735 cases (of these 979 occurred in foreigners)  
 1944 there were 7114 cases (of these 1135 occurred in foreigners)

## Deaths from pulmonary tuberculosis were:

In 1942 -	869
1943 -	898
1944 -	1084

## Deaths from all other types of tuberculosis (bones, joints, etc.) were:

In 1942 -	116
1943 -	118
1944 -	159

There is a law requiring the reporting of all new tuberculosis cases and the making of reports of progress every three months. Considerable tuberculosis of the glands (neck, retroperitoneal areas) is reported yearly and it is thought to be of the bovine type. This office said that it was regretted that the diagnosis of bovine tuberculosis was made only if present clinically in cows. Tuberculin tests would double the number of positive cases.

V. AN INTERVIEW WITH PROF. DR. WALTHER SCHÖNFELD, DIRECTOR OF THE SKIN AND VENEREAL DISEASES DEPARTMENT OF THE HEIDELBERG UNIVERSITY MEDICAL SCHOOL

Prof. Schönfeld was 56 years old, spoke no English but was most cooperative. He was trained under Zieler, a world famous German dermatologist, at Würzburg. After returning from the 1st World War he was professor at the small university of Greifswald from 1920 until 1935 when he was called to Heidelberg as director of the Department of Dermatology and Venereal Disease. He has not been a prolific writer and is not known outside of Germany for any research work or new ideas. He is best known for his hobby, which is writing on the history of Dermatology and its gradual development into one of the major branches of medicine. He is a typical example of the academic man fortunate enough to be in a small university and offers a sharp contrast to the forceful, almost Prussian, type of professor encountered at the head of a department in universities located in large metropolitan centers.

He is the author of a 520 page textbook of dermatology and venereal diseases which had gone through four editions in five years. It was intended for students and general physicians and is a handbook rather than an advanced textbook suitable for reference. It first appeared in 1939 and the fifth edition is now ready for printing. It was published by Quelle and Meyer whose establishment was completely destroyed by the December 1944 bombing of Leipzig. It was entitled: "Lehrbuch der Haut und Geschlechtskrankheiten". After going over this book it was concluded that it contained nothing unusual and gave only an up-to-date synopsis of dermatology, syphilis and gonorrhea as taught in Germany.

The department consisted of a very small (30 x 60') one story building used for offices, out-patient clinics and laboratories and two pavilion-type wards with a capacity of 100 beds. In peace time there were 150 beds devoted to these diseases. During the war only 30 beds were allowed to be used for civilians and the remaining 120 were for troops. The main skin diseases among the troops were some forms of psoriasis, dermatitis factica (self-induced by application of gasoline, motor oil and carbolic acid), gonorrhea and fresh syphilis. Soft chancre, granuloma inguinale and granuloma venereum had not been seen among the soldiers. These diseases are evidently very rare in Germany as the Doctor's files showed only 3 cases of soft chancre and one of granuloma inguinale among the civilian patients in the last ten years.

In peacetime the staff consisted of one Oberarzt, four paid, full-time assistants, two non-paid, part-time clinic assistants and various technicians. During the war, there were one Oberarzt, three part-time civilian assistants and two military medical officers. No research work or studies on these or related subjects was done during the past 6 years. This department has very little equipment consisting of one ultraviolet lamp, one infrared lamp and one Grenz ray (soft ray) machine of ancient vintage.

No penicillin had been available for use or experimentation. In going over the records of the clinic an interesting sidelight on medicine in Germany was met with. A photostatic copy of an article on penicillin published in England in April 1944 and distributed by the German Government in November 1944 was found. Articles from American Journals as late as June 1944 were also distributed to the Deans of all Medical Schools according to Schönfeld.

The following information was obtained about the present day method of treatment of various skin conditions in this clinic:

### 1. Carcinoma.

Superficial epitheliomata about the eyes were treated with Grenz rays while other types were treated with prophylactic hard roentgen rays and electro-coagulation. Keratoisis senilis lesions were handled with thorium plaques and needles. Radium needles were inserted in elevated fungating carcinoma. Extensive superficial Ca. was treated with the Coutard method while multiple basal celled epitheliomata of the back and chest were exposed to near-tar-gel ( $\frac{1}{2}$  cm) rays after the method of Chaoul. All x-ray and radium therapy was given in the Roentgen Department.

### 2. Blastomata.

Treatment consisted of general support with intramuscular injections of Fe. and of As. Roentgen rays were used to control tumor growth and prolong life with no hope of curing the underlying disease.

### 3. Eczema.

No new therapy - tar locally and roentgen rays sparingly - rule out allergy and occupational etiology.

Many eczemas of the breasts were thought to be due to trichophytic infection and were said to respond to trichophytin. Non-parasitic eczema of breast responded well to 2% aqueous solution of gentian violet. No mention was made of diet for the control of this type of nutritional eczema.

### 4. Psoriasis.

Arsenic internally - lenigallol and chrysarobin (antarobin) ointments; hydrarg. ammon. 5% in zinc paste locally. Roentgen rays to isolated patches - Fat-free or low protein diets of no value.

### 5. Lupus Vulgaris.

Local electro-coagulation of small early lesions; Pyrogallic acid ointment to larger lesions - No roentgen ray radiation because of tendency to develop Ca. on edges of lesions.

### 6. Lupus erythematosis.

Bismuth intramuscularly; gold intravenously with caution because of development of nephritis. Removal of all foci of infection.

## 7. Fungus Diseases.

a. Ringworm infection of scalp in pre-puberty ages very rare in Germany, especially in the Heidelberg area. Hand epilation for trichophyton infections and epilation by Roentgen ray radiation for microsporon types. Thallium acetate was found too toxic and is no longer used even under strict weight control.

### b. Epidermophytosis.

Ringworm infection of extremities (acromycosis) not frequent among civilians-often seen in troops returning from southern Russia, the Balkans and especially Africa. No specific treatment - local applications of aniline dye solutions such as Castellani's carbo-fuchsin solution and 2% aqueous gentian violet solution. Five per cent salicylic acid and 5% benzoic acid (Modified Whitfield's) ointment for keratotic lesions. Epidermophytin found to be of no value. Epidermophyton clypeiforme found to be the most frequent casual type.

## 8. Pemphigus.

All true cases end fatally - treatment is supportive with As. and frequent small blood transfusions. Streptococcal etiology not proven.

## 9. Syphilis.

The long standing well known treatment with courses of Neosalvarsan and Bismuth alternating with 6 weeks rest period. Malaria-fever treatment for late stages of systemic syphilis. Begin treatment early in pregnancy. This treatment is the same as that described in detail in the Leipzig and the Jena Medical Faculty reports. No penicillin had been available.

## 10. Gonorrhea.

Four day treatment with large doses (total of 22 grams) of sulfa drugs; repeated after one week if not cured. Fever induced by malaria infection if Neisser infection persists or if complications arise. See Leipzig report for details.

## CONCLUSIONS:

Nothing new or outstanding in the symptomatology or treatment of skin or venereal diseases was learned.

## VI. NEUROLOGIC DIAGNOSIS

Dr. Hermann Regelsberger is Oberarzt and holds the position of neurologist at Kriegslazarett 324F in Bamberg. In 1935 he devised an apparatus in which a very weak electric current is sent into the skin (flexor surface of the forearm, extensor of the thigh) and picked up by a sensitive galvanometer that measures in milliamperes. It soon became apparent that the resistance of the skin was less at mealtimes, giving a rhythmic daily pattern. Regelsberger believes that this is the result of the increased insensible perspiration which occurs at this time. This increased perspiration he feels is another manifestation of the rhythmic activity of the autonomic nervous system, demonstrated for other organs such as the liver and pancreas. The method and apparatus used is described in his article: "Das Elektrodermatogramm und die Nahrungsreflexe des Menschen" in Ergeb. f. inn. Med. u. Kindhlk. 48: 125-165, 1935.

During the past four years Dr. Regelsberger has tested this method in many instances of cerebral lesions and/or psychic disturbances. He believes that he can recognize five characteristic curves and their associated lesions; 1) low amplitude of the peaks = depression, 2) separation of arm and leg curves = hypothalamic lesion, 3) one curve of either an arm or leg, is of high potential with loss of rhythm = lesion of the brain stem on the same side, 4) all curves of high potential = thyrotoxicosis, 5) time lag of a curve = interference with cortico-thalamic pathways.

Dr. Regelsberger admits that these curves and their interpretation are still in need of much further study. The technique may also be of value in the investigation of peripheral vascular disease. Dr. A. Bingel of the U. of Erlangen has used this method in a series of psychotic patients. Regelsberger's apparatus as first constructed was quite large, but as made by the firm P. Gossen of Erlangen, the whole will fit into a coat pocket.

## VII. NEUROLOGY AND PSYCHIATRY

Dr. P. Meggendorfer is director of the psychiatric and neurologic clinic of the Univ. of Erlangen and was consultant to the Sanitätsinspektion. He agrees with the statements of other German psychiatrists that during the early years of the war, when soldier morale was high, neuroses were uncommon; during the past two years they were more frequently seen. Hysteria, particularly with paralytic manifestations, was seldom observed. The most common form of neurosis was that in which the symptoms simulated gastritis or peptic ulcer. Cardiac arrhythmias were not infrequent.

Schizophrenia and manic-depressive insanity responded well to electric shock therapy. Meggendorfer prefers a relatively low current for two seconds, rather than one of high potential for 0.2 seconds. The advantage of the former is the absence of vertebral and clavicular fractures which are not uncommon with the latter.

Neuroses were uncommon in civilians subjected to air bombardment. Dr. Meggendorfer had occasion to examine large numbers of patients after the destruction of Nürnberg. He states that they showed marked mental confusion, amnesia, and in some instances the so-called pseudopsychosis of Ganser. In this the patient may say that a ring is triangular in shape, that a cat barks, that  $2 \times 2 = 3$ . Depressions were common, but often accompanied by a strange exaggeration of the extent of the loss suffered: a woman might sob that all was gone, that she had lost her husband and her children, even though at that very moment they were standing beside her. Most of these patients responded well to rest and freedom from fear of air attacks.

### VI. GASTROENTEROLOGY

Oberstabsarzt E. Kalpen is a gastroenterologist and during 1933 and to 1939 performed 3,000 gastroscopies. During the war he was chief of the 200 bed gastrointestinal section of a 1200 bed lazarett in Freudenthal, Silesia where he personally carried out an additional 6,000 gastroscopies. At present he is in the Lazarett Schälerheim in Hof. Dr. Kalpen emphasizes that the gastroscopic examination is only an adjunct to the x-ray study. Its chief usefulness lies in the recognition of gastritis, the symptoms of which may resemble those of peptic ulcer. In fact, the resurrection of the concept of gastritis as a common malady is chiefly the result of gastroscopic examinations, since at autopsy most of the hyperemia and edema found in the living have disappeared.

All types of gastric disorders, both functional and organic, increased during the war. Dr. Kalpen attributes this to the great mental and physical strain placed upon all classes of the population. The increased stress of the war years became almost unendurable after July 20, 1944 - the date of the attempt on Hitler's life. The food progressively deteriorated; the slogan "guns instead of butter" best expresses the general condition. Fats became scarce and many unsatisfactory substitutes were introduced. The staple bread was a coarse Kommissbrot, in which quantities of adulterants were mixed with the flour. However, other exciting factors for the production of gastritis and gastric ulcer, particularly alcohol and spices, were consumed in smaller quantities

than formerly. Smoking, on the other hand, increased to a considerable degree, and Kalpen shares the belief of many German physicians that tobacco is associated with an increased incidence of gastric ulcer.

Dr. Kalpen is convinced on the basis of his experience that there has been an absolute increase in the incidence of gastric carcinoma in young individuals. He insists that the methods of examination and diagnosis have remained the same during the six year war period, but that the number of stomach carcinomas in young persons (18 - 30 yrs.) is greater. He can offer no explanation except that it may be related to the much greater increase in the frequency of gastric ulcer during this same period.

Whereas formerly the ratio of gastric to duodenal ulcer was 1:5, it is now about 1:2.5; however, the incidence of duodenal ulcer has likewise increased. Not only are the stomach ulcers more frequent, but their average size is much greater than formerly. Following treatment even the large ulcers often heal quickly. A small caliber rubber tube is passed through the patient's nose and allowed to be carried as far as the second or third loop of the jejunum. Hourly feedings of glucose, and later of cream and eggs are given through the tube for 21 days. Anti-spasmodics such as atropin are used, and local anesthetics are administered orally in the belief that they diminish the irritability of the gastric mucosa. Female sex hormones, particularly synthetic products such as stilbestrol, have been employed with good results. The rationale for their use is not wholly clear.

A patient with gastritis, diagnosed by gastroscopy, is given a semi-liquid, high vitamin diet. For the first 21 days of treatment 200 cc of a 0.5% silver albuminate or 1:10,000 silver nitrate solution is given orally before breakfast. In many cases of gastritis there is considerable blood loss due to diapedesis through the capillaries of the mucosa. The resultant secondary anemia is treated with liver and iron compounds.

Soldiers afflicted with gastritis or gastric ulcer were placed in units known as Magen-battalions. These battalions were given special diets and were used chiefly as non-combat troops. Occasionally, however, they were equipped with machine guns in fortified positions and then fought quite well.

Though the gastric neurosis has replaced the tremors of "shell shock" noted in the first world war, mucus colitis which is such a common peacetime neurosis of the gastrointestinal tract, has not appeared. However, ulcerative colitis

that responded poorly to all forms of treatment was a common sequel of bacillary dysentery. The latter disease was frequently observed in troops stationed in Poland and Russia. The mortality from the acute infection was low if transportation was reduced to a minimum, body warmth maintained, fluid balance preserved, and adequate nourishment provided.

#### IX. PSYCHIATRIC THERAPY

Dr. Pfannmueller was the director of the hospital for the insane at Egling-Haer when taken into custody. This fifty-nine year old psychiatrist has been a party member since 1933, at this time he also joined the S.A. In 1936 he was employed at the "Hauptamt fuer Technik", which bureau passed on the racial and biological qualification of applicants for various scholarships. During the years 1938 to 1940 he became the chief of the Department of Heredity of the Augsburg Health Department. Following this he became director of the state hospital at Egling-Haer.

The hospital of which Dr. Pfannmueller was the director had a capacity of 2,500 beds during peace time which had been increased to 3,000 during the war. Admissions varied slightly above 1,000 per year. These were taken directly from the surrounding countryside, or were referred from the Psychiatric Clinic of the Univ. of Munich. Two types of admissions were possible, voluntary and medical. The statement of one physician was all that was necessary for a medical admission. After admission the patient was given a period of observation at the hospital, during which a diagnosis was made. If the diagnosis was negative the patient had to be released within six weeks after admission. Patients adjudged insane were hospitalized only if they were dangerous to public welfare or morale, or were unable to care for themselves, or by their relatives. Thus a great part of these hospital cases were discharged into the care of relatives or were placed on farms outside of the hospital boundaries. An active outpatient clinic was maintained for such cases. The inhabitants of the institution therefore consisted mainly of psychotics of the deteriorated kind, of the criminally insane, and of the extreme feeble-minded.

In peacetime the staff of the hospital consisted of fifteen physicians. This staff was reduced to seven, including two "Hilfsaeerzte" during the war. The staff of 300 nurses and 200 male orderlies was not reduced to any great extent during the war.

The inmates of the institution obtained the same food rations from the government as the German civilians, with the exception of the periodic supplementary rations. Since

however, some of the patients were occupied in rather strenuous labor as a part of the general occupational program, it was necessary to dole out a larger ration to the working patients, as the ordinary ration would have been insufficient in caloric needs. Therefore, it was necessary to cut down on the rations of bed and sessile patients. Dr. Pfannmueller admits that these bed patients received grossly inadequate nutrition, and that the incidence of tuberculosis and the general mortality took a sharp rise at this institution, especially during the latter years of the war.

Therapy carried out at this hospital were those types usually carried out at such an institution. Insulin shock, cardiazol, amoman and electric shock treatments was the main form of psychiatric therapy at this institution. This therapy was found to be of great benefit in cases of the depressive phase of the manio-depressive psychoses, and in schizophrenia.

The routine shock therapy carried out most frequently at this hospital consisted of an initial insulin shock for thirty minutes produced in the early morning, followed by a partial revival by glucose. Thereupon the patient was given the electrical shock. This procedure was carried out six times a week on the same patient, for a period of a quarter year with this therapy routine. Dr. Pfannmueller claims very good results in the various depressions for schizophrenia and he quotes the following figures:

- a. Sixty percent of the patients cured of the condition to such an extent that no relapses necessitating subsequent hospitalization occur for a period of ten years.
- b. Fifteen percent of the patients showed cures but were readmitted within ten years.
- c. The problems of management in the hospital are greatly facilitated in all cases.

Another form of therapy widely used at this hospital was that of an organized occupational therapy program, carried out like those of the American hospitals. This was placed under the guidance of trained and government licensed technicians.

Sedative therapy varied from that usually practiced in the United States, in that continuous tubs were not used. It was felt that hydrotherapy had no advantage over simple solitary confinement. However, wet packs were utilized to a large extent, never exceeding the maximum time limit of

Twenty minutes. Psychotherapy was rarely utilized, as was hypnotic therapy.

The various medical treatments such as for Graves disease or for syphilis were under the direction of Dr. Bumke of the Univ. Medical School at Munich.

There was a regular system of euthanasia at this hospital. Although the director states that his admissions only slightly exceeded 1,000 per year, about 700 to 800 persons were sent away to be gassed every year. Dr. Pfannmueller claims that he himself had nothing to do with the actual killing of the patients but he says it was his duty to hand over "permanently hopeless" cases of insanity to the "Gemeinnützige Krankentransport Gesellschaft" which thereafter had full control of the patients. Patients thus handed over were judged by a circular which the patient's ward doctor filled out. The director thereupon visited the patient on the ward and went over his case and records, and approved or disapproved the ward doctor's decision. Necessary requirements for euthanasia were:

- a. At least five years continued observation of a patient at that institution.
- b. Psychoses only in terminal stages.
- c. Extreme feeble-minded cases only if institutionalization is necessary for life.
- d. The entirely asocial.

The National Socialist viewpoint on euthanasia prohibited the killing of the senile psychotics because of sentimental reasons.

When patients were handed over to this "transport company" they were shipped to a destination unknown to Dr. Pfannmueller. They were kept for a while at this place for the purpose of observation and diagnosis, and Dr. Pfannmueller knows of a few cases that were released and discharged after being handed over to the company. The remainder were killed by gassing.

It was Dr. Pfannmueller's job personally to inform the relatives that the patient had been transferred to the "transport company." From that moment on he says his responsibility ended although he knew of their subsequent fate. The "transport company" later notified the relatives that the patient had died of a disease, and that the patient's effects and ashes will be forwarded.

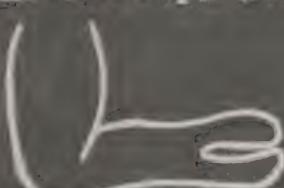
There were quite a few provincial institutes for this purpose. There was no open euthanasia law. It was all carried out in extreme secrecy. He states that the civil population knew nothing of this program in the beginning, but later on the relatives became suspicious. The entire program was abruptly stopped in the winter of 1942, and no euthanasia has been practiced since that time. He believes that this was due to the protest of relatives and general public feeling against the program.

In May 1943, Prof. Schneider of the Heidelberg University Medical School taught a special course at the university on the diagnosis, therapy, and prognosis of neuropsychiatric disease with emphasis on prognosis and the choice of subjects for euthanasia. Part of this course consisted in inspection of the institution of Wiesloch in Baden.

## III. ORTHOPEDICS

The Sonderfachlazarett für Ohnblinder is located in Alexander Bad, west of Bayreuth. It was designed for the treatment and care of soldiers who had lost one hand and suffered severe injury or loss of the other as well. Of the 90 patients 15 were also blind. Oberstabsarzt Walter Ruppel has charge of their surgical and medical care. During the war he worked with Dr. L. Kreuz, professor of orthopedics at the University of Berlin, who adopted and modified the operation devised by Kruckenberg in 1916.

In this operation the distal portions of the radius and ulna are separated for a distance of approximately 8 inches. The muscles that are attached to the radius, as well as their vascular and nervous supply, are covered by the skin of the arm; the ulna and its associated soft tissues are by a graft obtained from the abdominal wall. Amputation of the hand is performed as far distally as possible, since better apposition of the radial and ulnar components of the subsequent "claw" are obtained; also this skin is particularly rich in tactile corpuscles.



Where all the fingers and thumb of a hand have been lost, the first and fifth metacarpals are dissected free, after which they and their muscles are covered by skin (phalangealization). This affords the patient grasping power similar to that achieved with the radio-ulnar operation.

Herr E. Krusemann, formerly of the orthopedic clinic of the U. of Berlin, is in charge of the training program for these patients. By attaching a pencil, shaving brush,



razor, etc. to a small cork wedge, the patients readily learn to use these with facility. Spoon and fork require only a slight alteration to enable the patients to use them with skill. Later, he learns to use the regular commercial items.

Shoes are provided with elastic side walls instead of laces, uniforms have zippers and push buttons in place of the usual button and button hole. The patient quickly learns to wash, dress, feed himself, and use the toilet without assistance. Many trades are available in which the handicap can be reduced to a minimum, e.g., book-keeping and farming.

A prosthesis can be fitted in which the hand makes grasping movements. However, this is usually worn for cosmetic reasons only. The advantage of the Kruckenberg plastic operation is that a prosthesis is not needed; unlike the methods in which ivory pegs are passed through the forearm so that the motion of the tendons is imparted through them to an artificial hand. A prosthesis inevitably becomes soiled and cannot be properly cleaned by the patient who has lost both hands. Another disadvantage of the prosthesis is that it is necessary for the wearer to guide its movements under direct observation, while with the claw stump he can usually tell what he is doing by touch alone.

Many patients develop surprising skill in the use of their stumps - one opened a box of safety matches, removed a match, struck it, and lit a cigarette. Two motion pictures have been made illustrating the training of these individuals: "Schulung und Arbeitseinsatz nach schweren Hand- und Armverletzungen" and "Wille zum Leben". These were placed in the Reichsanstalt für Film und Bild, branches of which are in all the large cities.

As of February 1945 there were 670 German soldiers who had suffered the loss of both hands. Of these, 340 had undergone plastic operations and training, of the latter, 92% were employed in gainful occupations.

## XI. PATHOLOGY

Dr. Walther Schwarzacher is now pathologist at the Landeskrankenhaus in Salzburg. From 1927-1936 he was professor of forensic medicine at the Univ. of Heidelberg and from 1936-1938 held the same position at the U. of Graz. Because of his antipathy to the Nazi regime he was ousted from this post and for the past seven years has lived in seclusion.

Dr. Schwarzacher opposed the sterilization law of 1933. He observed many fatalities following operation of women by inexperienced surgeons during the years 1934-35 when mass sterilizations were carried out. The relation of forensic medicine to the German state, as of 1938, is detailed in Mueller and Walcher's "Gerichtliche und soziale Medizin". On pp. 46-52 of this book is a discussion of the sterilization law with a list of the conditions in which sterilization was mandatory.

Dr. Theodor Schmidt, Schwarzacher's assistant in Heidelberg, became chief of an army lazarett in Breslau for the treatment of self-inflicted injuries. From him Dr. Schwarzacher received work that artificially induced dermatoses were the most common forms of self-injury. They were frequently produced by the local application or even subcutaneous injection of acids, gasoline, or soap. A salicylate (Lactophenine), commonly employed in therapeutic doses of 0.6 gram, was occasionally used by malingerers. An oral dose of 8 - 10 grams produces a very severe jaundice which may readily lead to the mistaken diagnosis of Weil's disease or epidemic hepatitis. Patients who admitted their offense were sent to the front in so-called "punishment battalions", the others were shot.

## XII. INSECT ATTRACTANTS

Dr. Adolf Butenandt, director of the Kaiser Wilhelm Institut für Biochemie of Berlin, has moved his staff and equipment to the Medical School of the U. of Tübingen. While in Berlin he extracted a powerful male attractant from the "sexual" glands of female silkworm moths. These glands lie in the last three abdominal segments of the female moth.

The purified substance is a solid alcohol, soluble in the common fat solvents. For purposes of experimentation it is dissolved in benzol. If a glass rod, dipped in the solution is brought near the male moths, they are attracted to it. Many other species of lepidoptera were tested and failed to respond. The same was true of various coleoptera, hemiptera, orthoptera, etc. The substance is therefore apparently wholly species specific. It is well known, however, that most if not all female insects secrete a male attractant. Dr. Butenandt believes that some compound may be common to all these substances. If this could be isolated from the silk moth attractant it might prove of great value for insect control work.

Technique of extraction:

a) The last three abdominal segments of the female moths are amputated and about 100 placed in 100 cc of petroleum ether. This is then shaken at room temperature for 10-15 minutes. The ether is poured off and the process repeated 4-5 times until the ether no longer contains any of the active substance. This can be determined by dipping a glass rod in the ether extract; if the agent is present the male moths will begin to tremble and flutter their wings when the rod is brought near them.

b) Evaporate the ether extract in vacuo. This leaves a waxy residue.

c) Add enough 2N KOH to the residue to dissolve it. This will saponify the fats but will not affect the attractant.

d) Add ether to the KOH solution and shake thoroughly. The active agent will be dissolved in the ether.

e) Distill off the ether; the distillate contains the attractant.

f) Esterify with succinic acid anhydride in pyridine.

g) Shake out with ether; the ether will contain the acid esters of the active agent.

h) Shake with KOH, then heat gently. The esters will split leaving all nonsaponifiable alcohols, including cholesterol, in solution.

i) Precipitate the cholesterol with digitonin. Filter.

j) Evaporate the filtrate in vacuo. The residue will be a clear colorless waxy substance - the purified attractant.

k) The solid attractant can be kept for only a few weeks, then it deteriorates. For purposes of experimentation the substance is dissolved in benzol.

Jahrbuch der Preuss. Akademie der Wissenschaften 1939

Klassensitzung am 23. November 1939.

Mathematisch-naturwissenschaftliche Klasse

Hr. Butenandt sprach über "Zur Kenntnis der Sexual-Lockstoffe bei Insekten". (Ersch. später.)

Es wird über den Stand unserer Kenntnisse auf dem Gebiet der Attraktivstoffe im Reich der Insekten berichtet. Bei vielen Insekten, besonders bei Schmetterlingen, sondern die Weibchen in einer Hinterleibsdrüse Lockstoffe ab, mit deren Hilfe sie Männchen aus weiter Entfernung anlocken. Am Beispiel des Seidenspinners (*Bombyx mori*), der sich für quantitative Untersuchungen im Laboratorium vorzüglich eignet (K. Görnitz und H. Schotte), konnte gezeigt werden, daß der vom Weibchen bereitete Lockstoff eine lipoidlösliche, neutrale, unverseifbare Verbindung darstellt, die sich als thermostabil und destillierbar erwies. Sie ist beständig gegen verdünnte Säuren und Alkalien, ist mit Lipasen oder durch Erhitzen mit verd. Alkali oder verd. Säure nicht spaltbar, aber empfindlich gegen Oxydationsmittel und konzentrierte Säuren. Unter Ausnutzung der bisher bekannten chemischen und physikalischen Eigenschaften wurde aus dem Petrolätherextrakt der Hinterleiber von etwa 1500 Faltern (insgesamt 150 bis 160 mg Substanz) in geringer Menge eine ketonfreie Neutralfraktion gewonnen, die keine meßbare Menge an Stickstoff mehr enthält und mit 0,01 noch eine deutlich nachweisbare Erregungswirkung auf *Bombyx*-Männchen ausübt. Die farblosen Petrolätherextrakte zeigen keine charakteristische Lichtabsorption im Ultraviolet. Die Untersuchungen bringen den endgültigen Nachweis, daß die Weibchen des Seidenspinners einen chemisch faßbaren Attraktivstoff abscheiden, der nach unserem heutigen Wissen nicht zu den Kohlenhydraten, Fetten oder Eiweißstoffen gehören kann. Die chemische Charakterisierung der Attraktivstoffe der Insekten kann große Bedeutung für eine planmäßige Schädlingsbekämpfung erlangen.

### XIII. REPORT OF AN INTERVIEW WITH PROF. DR. GERHARD KÜNTSCHE AT FRANKFURT, GERMANY

Our attention was called to the presence in Frankfurt of Dr. Gerhard Kuntscher, Professor of Surgery at the Univ. of Kiel. He is the originator of the idea of inserting nails into the bone marrow channel in the treatment of fractures, both simple and compound, of the long bones of the extremities. He began this type of treatment 6 years ago. He is not the originator of the use of nails in bone surgery. He is 45 years old, speaks English fairly well and was very cooperative.

Since this method was first used in 1939, thousands of cases have been treated in this manner and more than 200 publications and two books dealing with the subject have appeared. Although most of the reports have been favorable and the end results satisfactory, poor results have also been obtained. Dr. Kuntscher stressed the point that not only

W-5397 10

should the operator be a trained orthopedist and surgeon but also that it takes considerable time and instruction in the technique of this operation in order to develop the proper judgement needed to choose the type and exact size of nail best adapted to each case. So many bad results occurred in war surgery in Germany that Dr. Käntscher requested the Surgeon-General of the Army and Navy to prohibit the use of this method except by specially trained men. An order to this effect was issued about 8 months before capitulation. Medical officers were sent to Kiel for a two weeks course in this technique during 1943 and 1944. Classes were limited to 15 officers.

Major Sloan, a trained orthopedist, attached to the 116th U.S.A. General Hospital at Frankfurt, was invited to sit in during the interview. His opinion as to the advantages and disadvantages of this method will be attached herewith marked Appendix 1.

Dr. Käntscher's permanent address is Ortslazarett III, Schleswig, about 18 kilometers north of Kiel. It was impossible to obtain a set of nails from him. He stated that the two factories manufacturing them in Kiel had been totally destroyed and they had not been made at any other place in Germany. However, nails very similar to the Käntscher nail must have been made in other places in Germany as Major Sloan said he had seen some that had been removed from fractures in P.W.s. The Käntscher nail-set can be obtained from a firm in Sweden, Stiffe Mfg. Co., Stockholm 4. It is called "Märgspik" in Swedish.

In June 1944 at the last orthopedic Congress held in Vienna an entire day was devoted to a symposium on the use of the Käntscher method in war orthopedics. It was not known by Dr. Käntscher where or when the report of the meeting was published.

The two books on this method are:

1. "Technik der Knochenbruchbehandlung im Frieden und im Kriege (Die Marknagelung nach Käntscher)" by Dr. Lorenz Böhler (Professor of Surgery at the Univ. of Vienna). Published in 1943 by Wilhelm Maudrich, Vienna. This is volume 3 (370 pages) of a three-volume set dealing with the treatment of fractures. Other methods are described in Vols. 1 & 2.

2. "Die stabile Osteosynthese (Marknagelung nach Käntscher) bei Schaftbrüchen der langen Röhrenknochen, ihre Indikation und Technik" By C. Häbler (Chef-Arzt at the Krankenhaus Clementinenhaus at Hanover). Published in 1944

by J.F. Lehmann of München and Berlin as volume VIII (207 pages) of the Taschenbücher des Truppenarztes. Both of these books are profusely illustrated.

Indications, contra-indications, complications, technique and results will be briefly discussed at this point.

The use of nails to serve as an internal splint in fractures of long bones of the extremities is indicated in both simple, compound and comminuted fractures. It is also used in old, healed, temporarily set cases where considerable shortening and overlapping of fragments with hypertrophic callus formation occur. In this latter type of case open reduction is done, excess callus removed, a lateral bone splint is placed only on one side of the bone and then the nail is inserted. No post operative traction, casts or supportive splints are used. It is indicated in compound fractures in the presence of pus and sinus formation at the site of the fracture. It was said that the nails which were made of steel, chromium and nickel had a sterilizing effect and prevented infection traveling along the bone cavity and causing linear osteomyelitis. Dr. Käntscher stated that proper alignment of the bone and release of pull on the muscles improved circulation and contributed to overcoming the infection. Since no plaster casts or splints are used and since the patient becomes ambulatory in 4 or 5 days normal conditions of muscle tone and viability are quickly restored. Evacuation of this type of fracture treated with nails is facilitated and the period of hospitalization is reduced from 7 weeks to a few days. After x-ray pictures show the bone is completely healed the nail is removed. This is usually after 3 to 4 months. In cases where the knee joint has been destroyed or removed a long nail extending from the trochanter of the femur to the lower end of the tibia is inserted and can be allowed to remain indefinitely. Patients seem to prefer this method of treatment for the complete fixation of the fragments causes pain to cease within 36 hours. The fact that they do not have to stay in bed for several weeks also has served to popularize this method.

Although the danger of infection with any operation on bones is always present it was said to occur in less than 1% of the cases and never lead to osteomyelitis severe enough to result in pseudoarthrosis. This figure is about one-tenth of that for the occurrence of infection when fractures are laid open and bone grafts or other types of splints are used. A centimeter-long incision is made to allow the introduction of the Käntscher nail. Infection from the outside thereby is reduced to a minimum.

Aside from surgical skill and selection of cases, success depends entirely upon the choice of the size and length of the nail to be used. It must fit the bone marrow snugly

in order to prevent rotation of the fragments. The nail has a rounded V-shape and impinges on the cavity walls only in 3 places; thus the blood supply and nutrition of the bone are not disturbed. The nails also vary in form and texture according to the location of the fracture. Nails used in fractures of the femur and ulna are straight and non-flexible while those used in the other bones of the extremities are slightly curved and flexible. In fractures of the tibia in order to give more weight bearing strength two nails, one fitted snugly over the other, are used. A wire is introduced in the cavity and then the needle is threaded on the wire. Traction is exerted and the position of the fragments is controlled by x-rays and finally the needle is withdrawn. A centimeter of nail is left protruding from the bone to allow easy removal and the skin closed over.

Dr. Käntscher said that he had never experienced atrophy and non-union at the site of the fracture as is so often apt to occur in nail surgery of fractures of the neck of the femur. He believed such good results were due to the thick walls of the shaft of the femur and a better blood supply.

Since the introduction of these nails causes more or less injury to the bone marrow and its vascular supply, the possibility of fat embolism with fatal results is always to be kept in mind. Käntscher considers the possibility minimal as the V-shape of the nail allows drainage of any hemorrhage produced which prevents excess pressure in the blood vessels of this area. He feels that the occurrence of fat embolism is no more frequent by nail-insertion than by other open reduction forms of treatment. Häbler, reporting on 700 cases, encountered 2 fatal cases which he thought were surely due to fat embolism. Fat embolism caused by the injury producing the fracture should not be confused with that following nailing. It was also pointed out that fat embolism occurred only after inserting nails for fractures of the femur.

Käntscher has shown experimentally that his nails, because of their V-shape, do not injure the bone marrow sufficiently to prevent stimulation of callus formation; on the contrary, it acts as a foreign body and results in an irritative hypertrophy. This callus formation never goes beyond that seen in fractures treated by open methods.

Specific figures with reference to the percentage of cures, failures, complications and deaths could not be obtained from Dr. Käntscher or the publications at the investigators disposal.

W-5337 10

Dr. Rice, a scientific investigator, tried to locate Dr. Kuntscher in June. A group of American physicians headed by a Dr. Rossman did not find him at home in July. Dr. Kuntscher then attempted to contact the American military government.

He stated to this investigator that he would be willing to work with our doctors here in Germany or in the U.S. or he would even be willing to go to the Pacific Theater as he feels his method has an important place in war surgery as well as in peacetime accidents.

CONCLUSIONS:

The bone marrow nail method of fixation of fractures of the long bones of the extremities appears to be of great value provided that cases are carefully selected and the operation is done by skilled surgeons experienced in this special technique. With the latter point in mind it is recommended that a certain number of trained orthopedists now attached to Army hospitals in France and Germany be assigned to take a course of instruction at the Ortslazarett III at Schleswig. These men could be used as a nucleus to instruct others.

APPENDIX I.

ORTHOPEDIC SECTION  
97TH (U.S.) GENERAL HOSPITAL  
APO 758 US Army

DS/ew

5 August 1943

SUBJECT: Investigation of a New Method of Intramedullary Nailing of Long Bones for Fracture.

TO : Col. C. L. McCarthy,  
Surgeon's Office  
12th Army Group, APO 655

1. On 1 August 1945 I was present, as orthopedic advisor, at an interview in which Prof. Dr. Gerhard Kuntscher explained his original method of intramedullary nailing for fractures of the long bone.

2. Essentially, the method consists in driving a steel rod down the length of the marrow cavity of a long bone in order to fix the fracture fragments. This rod is kept in place a varying length of time and is then removed. Insertion was performed under spinal anesthesia.

3. Several rods of various length were demonstrated. They were C-shaped in cross-section, about a centimeter in diameter, one end sharp for bone penetration, the other dull with an eyelet to facilitate removal.

4. The method was originated about 1939. Prof. Lorenz Bohler of Vienna has written a book on the subject. He cites many cases but the end result figures were not available to us. Prof. Dr. Kuntscher uses this method for both simple and compound fractures. He too has no available end result statistics.

5. From the above demonstration and my personal discussion of this method with other army surgeons I believe that as far as the army is concerned the method is still on trial. It may be useful when a situation arises which necessitates having key personnel back at work in a few days, but as a matter of routine army use I believe the method needs extensive trial in American hands.

/s/ David Sloane  
/t/ DAVID SLOANE  
Major, MC.  
Chief of Orthopedic Section  
97th General Hospital  
APO 758

6 August 1945

1st Ind.

ODS/ww/ew

Office, Chief of Surgical Service, 97th General Hospital,  
APO 758, U. S. Army.

TO: Commanding Officer, 97th General Hospital, APO 758,  
U. S. Army.

1. Approved.

/s/ Charles D. Squires  
/t/ CHARLES D. SQUIRES  
Lt. Col., MC.  
Chief of Surgical Service

#13,573

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